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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,807	02/25/2004	Hui-Mei Chen	MEG02-005	3341

7590 01/13/2006  
GEORGE O. SAILE  
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EXAMINER

AU, BACH

ART UNIT PAPER NUMBER

2822

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/786,807	CHEN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Bac H. Au	2822	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 15-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-33 is/are rejected.
- 7) ☒ Claim(s) 26 and 33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's amendment dated November 10, 2005 in which claims 1-14 were canceled, and claims 15-33 were added, has been entered.

### ***Claim Objections***

2. Claims 26 and 33 are objected to because of the following informalities: "said contact point" of claim 26 line 2 should be --said pad--; and "said contact point" of claim 33 line 2 should be --said bump--. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 15-16, 20, 27-29, and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Danovitch (U.S. Pub. 2004/0175657).

Art Unit: 2822

Regarding claims 15 and 27, Danovitch [Fig.7] discloses a method for fabricating a semiconductor wafer with a contact point [20] comprising gold [Para.30 lines 8-10], comprising:

- cleaning said contact point [Para. 33];

- after said cleaning said contact point, testing said semiconductor wafer by using a testing element contacting said contact point [Para.38 lines 1-6];

- depositing a bump [20] on a topmost patterned circuit layer of said semiconductor wafer, wherein said bump comprises a pillar-shaped portion;

- cleaning said bump [Para. 33]; and

- after said cleaning said bump, testing said semiconductor wafer by using a testing element contacting said bump [Para.38 lines 1-6].

Regarding claims 16, 20, 28-29, and 33, Danovitch [Fig.7] discloses

- wherein said contact point is provided by a circuit pad [20];

- wherein said testing element comprises a probe contacting said contact point; said bump [Para.38 lines 9-12];

- wherein a top surface of said bump [20] is substantially flat;

- wherein said bump [20] has a top surface and a side surface, wherein said top and side surfaces are connected with discontinuity [As seen from fig.7, bump 20 has a top surface and a side surface that are not continuous but has a distinct edge, hence are connected with discontinuity].

Art Unit: 2822

4. Claims 21-22 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Broz (U.S. Pub. 2004/0115934).

Regarding claims 21-22 and 26, Broz [Figs.1d] discloses a method for fabricating a semiconductor wafer comprising a passivation layer [104] and a pad [102], an opening in said passivation layer exposing said pad;

cleaning said pad [Para.7];

after said cleaning said pad, testing said semiconductor wafer by using a testing element [110] contacting said pad;

wherein said pad comprises aluminum [Para.16 lines 4-7];

wherein said testing element comprises a probe [110] contacting said contact pad.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 17-19 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Danovitch in view of Ying (U.S. Pub. 2004/0209476).

Regarding claims 17-19 and 30-32, Danovitch [p. 3, para. 33, lines 4-6] discloses that "Techniques well known in the art, such as plasma cleaning, wet or dry chemical

Art Unit: 2822

cleaning, for example, may be employed.” Danovitch fails to disclose said cleaning comprise ion milling with argon; helium; and neon. However, Ying discloses a method of cleaning wherein “The plasma treatment step uses a plasma comprising an inert gas to remove residues...” [P. 1, para. 17, lines 7-9]. Ying teaches the plasma to be comprised of “at least one of argon (Ar), neon (Ne), helium (He), and the like.” [p. 3, para. 34, lines 1-5]. Finally, Ying teaches “... physical plasma processes, such as ion milling, sputtering, and the like.” [p. 1, para. 7, lines 1-4]

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Ying into the method of Danovitch to have said cleaning comprise ion milling with argon; helium; and neon. Danovitch teaches plasma cleaning, and Ying further defines plasma processes to include ion milling. The ordinary artisan would have been motivated to modify Danovitch in the manner set forth above for at least the purpose of having an inert environment to eliminate unwanted attack of the surface being cleaned, which is well-known in the art.

6. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Broz in view of Ying (U.S. Pub. 2004/0209476).

Regarding claims 23-25, Broz fails to disclose said cleaning comprise ion milling with argon; helium; and neon. However, Ying discloses a method of cleaning wherein “The plasma treatment step uses a plasma comprising an inert gas to remove residues...” [P. 1, para. 17, lines 7-9]. Ying teaches the plasma to be comprised of “at least one of argon (Ar), neon (Ne), helium (He), and the like.” [p. 3, para. 34, lines 1-5].

Art Unit: 2822

Finally, Ying teaches "... physical plasma processes, such as ion milling, sputtering, and the like." [p. 1, para. 7, lines 1-4]

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Ying into the method of Broz to have said cleaning comprise ion milling with argon; helium; and neon. Broz teaches cleaning by ion bombardment or sputter etch by plasma [Para.21 lines 1-5], and Ying further defines plasma processes to include ion milling. The ordinary artisan would have been motivated to modify Broz in the manner set forth above for at least the purpose of having an inert environment to eliminate unwanted attack of the surface being cleaned, which is well-known in the art.

### ***Response to Arguments***

7. Applicant's arguments filed November 10, 2005 have been fully considered but they are not persuasive. Applicant has merely pointed out the novelty of Applicant's invention, and has not argued any deficiencies of the cited references as they pertain to the claims. Therefore, the arguments are not persuasive and the rejection is upheld.

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

Art Unit: 2822


TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bac H. Au whose telephone number is 571-272-8795. The examiner can normally be reached on Mon-Fri 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BHA

  
ZANDRA V. SMITH  
SUPERVISORY PATENT EXAMINER  
9 Jan 2004